

## ABSTRACT OF THE DISCLOSURE

Methods of operation of different types of multiple electrode apparatus vertically disposed in a cased well to measure information useful to determine the resistivity of adjacent geological formations from within the cased well are described. The multiple electrode apparatus has a plurality of spaced apart voltage measurement electrodes that electrically engage a portion of the interior of the cased well. During measurements of information useful to determine formation resistivity, current is conducted between a first current conducting electrode in electrical contact with the interior of the cased well to a second current conducting electrode that is also in electrical contact with the interior of the cased well. The first and second current conducting electrodes are separated by a distance sufficient so that at least a portion of the current conducted between the first and second current conducting electrodes is conducted through the geological formation of interest.